

IN THE CLAIMS

Please cancel claims 6 and 12 without prejudice or disclaimer, and amend claims 1, 5, 9, 11, 14, 15, 17, 20, 23 and 26 as follows:

1 1. (Currently Amended) A multi-channel image encoding apparatus for selectively
2 receiving image signals transmitted through a plurality of input channels and encoding the
3 image signals, comprising:

4 a channel data processor comprising a frame buffer group including a plurality of
5 frame buffers for each input channel in order to receive a plurality of frame data through the
6 plurality of input channels and to store the plurality of frame data, the channel data processor
7 selecting data transmitted to the frame buffer group to output the selected data, the channel
8 data processor storing each unit of the frame data into the frame buffer group corresponding
9 to each channel in accordance with a set-up input channel selection order; and

10 an encoder for encoding image signals output from the channel data processor with
11 a Moving Picture Experts Group method;

12 said channel data processor comprising:

13 a first multi-switch unit for selectively contacting each of the input
14 channels with the frame buffer group corresponding to each of the input
15 channels; and

16 a second multi-switch unit for selectively contacting the frame buffer
17 group with the encoder and outputting data output from the frame buffer group

18 to the encoder;

19 said encoder comprising:

20 a discrete cosine transformer for performing a discrete cosine transform
21 with respect to the image signals inputted from the second multi-switch unit;

22 a quantizer for quantizing signals outputted from the discrete cosine
23 transformer and outputting the quantized signals

24 a variable length encoder for performing variable length encoding with
25 respect to signals outputted from the quantizer, and outputting the encoded
26 signals; and

27 a parser for loading channel information about each frame to signals
28 outputted from the variable length encoder, and outputting the signals.

1 2. (Previously Presented) The multi-channel image encoding apparatus of claim 1,
2 wherein the plurality of frame data stored in the frame buffer group is outputted to the
3 encoder for each channel.

Claim 3. (Canceled)

1 4. (Previously Presented) The multi-channel image encoding apparatus of claim 1,
2 said first multi-switch unit storing each unit of the frame data into the frame buffer group
3 corresponding to the input channels in accordance with a set-up input channel selection

4 order, and the second multi-switch unit contacting with the frame buffer group in accordance
5 with a set-up channel contact order and outputting the plurality of frame data stored in the
6 contacted frame buffer group for each of the input channels.

1 5. (Currently Amended) The multi-channel image encoding apparatus of claim 4,
2 said encoder further comprising:

3 ~~a discrete cosine transformer for performing a discrete cosine transform with respect~~
4 ~~to the image signals inputted from the second multi-switch unit;~~

5 ~~a quantizer for quantizing signals outputted from the discrete cosine transformer and~~
6 ~~outputting the quantized signals;~~

7 an inverse quantizer for inversely quantizing the quantized signals;

8 an inverse discrete cosine transformer for performing an inverse discrete cosine
9 transform with respect to the inversely quantized signals;

10 a prediction memory;

11 an adder for adding data outputted from the prediction memory and the inversely
12 discrete cosine transformed data, and outputting the added data to the prediction memory;
13 and

14 a subtracter for subtracting data outputted from the prediction memory from signals
15 inputted through the second multi-switch unit, and outputting the subtracted signal to the
16 discrete cosine transformer.

Claim 6 (Canceled)

1 7. (Previously Presented) The multi-channel image encoding apparatus of claim 1,
2 further comprising:

3 a channel selection unit including a key for setting up a channel select pattern with
4 regard to the plurality of input channels; and

5 a channel controller for controlling the first multi-switch unit and the second multi-
6 switch unit in accordance with the channel select pattern set up by the channel selection unit.

Claim 8. (Canceled)

1 9. (Currently Amended) A multi-channel image encoding apparatus for encoding
2 image signals inputted through a plurality of input channels, comprising:

3 a channel data processor for selectively contacting with the plurality of input channels
4 and selectively outputting transmitted image signals for each of the input channels; and

5 an encoder for encoding signals outputted from the channel data processor by using
6 a previous frame data stored in a prediction memory provided for each corresponding
7 channel;

8 said channel data processor comprising:

9 a first multi-switch unit for selectively contacting the input channels
10 with frame buffer corresponding to each of the input channels; and

11 a second multi-switch unit for selectively contacting the frame buffer
12 with the encoder and outputting data outputted from the frame buffer to the
13 encoder;

14 said encoder comprising:

15 a discrete cosine transformer for performing a discrete cosine transform
16 with respect to the input image signals;

17 a quantizer for quantizing signals outputted from the discrete cosine
18 transformer;

19 an inverse quantizer for inversely quantizing the quantized signals

20 a variable length encoder for performing a variable length encoding with
21 respect to signals outputted from the quantizer; and

22 a parser for loading channel information about each frame to signals
23 outputted from the variable length encoder, and outputting the signals.

Claim 10. (Canceled)

1 11. (Currently Amended) The multi-channel image encoding apparatus of claim 9,
2 said encoder further comprising:

3 ~~a discrete cosine transformer for performing a discrete cosine transform with respect~~
4 ~~to the input image signals;~~

5 ~~a quantizer for quantizing signals outputted from the discrete cosine transformer;~~

6 an inverse quantizer for inversely quantizing the quantized signals;
7 an inverse discrete cosine transformer for performing an inverse discrete cosine
8 transform with respect to the inversely quantized signals;
9 an adder for adding data outputted from the selected prediction memory and the
10 inversely discrete cosine transformed data, and outputting the added data to the prediction
11 memory of corresponding channels;
12 a subtracter for subtracting data outputted from the prediction memory from signals
13 inputted through the second multi-switch unit, and outputting the subtracted signal to the
14 discrete cosine transformer; and
15 a prediction memory selection unit for controlling the prediction memory of channels
16 corresponding to the selected channels by the second multi-switch unit to be contacted
17 between the adder and the subtracter.

Claim 12 (Canceled)

1 13. (Previously Presented) The multi-channel image encoding apparatus of claim 11,
2 further comprising:
3 a channel selection unit having a key for setting up a channel select pattern with
4 regard to the plurality of input channels; and
5 a channel controller for controlling the first multi-switch unit, the second multi-
6 switch unit, and the prediction memory in accordance with the channel select pattern set up

7 by the channel selection unit.

1 14. (Currently Amended) An encoding method of a multi-channel image encoding
2 apparatus for selectively receiving image signals transmitted through a plurality of input
3 channels and encoding the image signals, comprising the steps of:

4 outputting unit frame data transmitted in correspondence to a set-up input channel
5 selection order for each channel to an encoder;

6 selecting a prediction memory of channels corresponding to the unit frame data among
7 the prediction memory with numbers corresponding to the number of the input channels; and

8 encoding by using the data previously stored in the prediction memory and frame data
9 of a current input channel;

10 said encoding comprising performing a discrete cosine transform with respect to the
11 image signals to produce resultant output signals, quantizing the resultant output signals to
12 produce quantized outputs, performing a variable length encoding with respect to the
13 quantized outputs to produce variable length encoded outputs, loading channel information
14 about each frame to the variable length encoded outputs, and outputting loaded signals.

1 15. (Currently Amended) A multi-channel image encoding apparatus for encoding
2 image signals inputted through a plurality of input channels, comprising:

3 a channel data processor for selectively contacting with the plurality of input channels
4 and selectively outputting transmitted image information for each of the input channels; and

5 an encoder for calculating a similarity by comparing image signals outputted from the
6 channel data processor and previous frame data stored in a frame memory provided for
7 corresponding channels, and selecting one mode among a plurality of encoding modes set up
8 differently for each other with regard to present frame data in accordance with the calculated
9 similarity and encoding according to the selected encoding mode;

10 said channel data processor comprising a first multi-switch unit for selectively
11 contacting each of the input channels with a frame buffer of corresponding channels, and a
12 second multi-switch unit for selectively contacting ~~[[an]]~~the encoder with the frame buffer,
13 and outputting data outputted from the frame buffer to the encoder;

14 said encoder comprising

15 a discrete cosine transformer for performing a discrete cosine transform
16 with respect to the image signals inputted from the second multi-switch unit;

17 a quantizer for quantizing signals outputted from the discrete cosine
18 transformer and outputting the quantized signals

19 a variable length encoder for performing variable length encoding with
20 respect to signals outputted from the quantizer, and outputting the encoded
21 signals; and

22 a parser for loading channel information about each frame to signals
23 outputted from the variable length encoder, and outputting the signals.

1 16. (Previously Presented) The multi-channel image encoding apparatus of claim 15,

wherein the plurality of encoding modes comprises:

a first mode for encoding the present frame data with an intra coding method; and

a second mode for encoding data gained by subtracting the previous frame data from the present frame data.

17. (Currently Amended) The multi-channel image encoding apparatus of claim 16, said encoder comprising:

~~an encode unit for encoding; and~~

a similarity calculation unit for determining a corresponding encoding mode by calculating ~~[[the]]~~a similarity, ~~controlling the encode unit to perform~~ performing the determined corresponding encoding mode, and outputting determined encoding mode information.

Claim 18. (Canceled)

19. (Previously Presented) The multi-channel image encoding apparatus of claim 15, said encoder comprising:

an intra frame coder for intra coding with respect to inputted image signals;

an intra frame decoder for decoding with respect to signals outputted from the intra frame coder;

an adder for adding data outputted from a selected frame memory and data outputted

7 from the intra frame decoder, and outputting the added data to the frame memory of
8 corresponding channels;

9 a subtracter for subtracting data outputted from the selected frame memory from
10 signals inputted through the second multi-switch unit and outputting the subtracted signal
11 to the intra frame coder; and

12 a frame memory selection unit for controlling the frame memory of channels
13 corresponding to channels selected by the second multi-switch unit accommodating to be
14 contacted between the adder and the subtracter by being controlled by the similarity
15 calculation unit.

1 20. (Currently Amended) The multi-channel image encoding apparatus of claim 17,
2 said similarity calculation unit calculating a similarity by comparing previous screen data
3 stored in ~~[[the]]~~a selected frame memory by a frame memory selection unit and frame data
4 of a selected channel by a multi-switch unit with a set-up macro block unit, and determining
5 an encoding mode with the set-up macro block unit.

1 21. (Previously Presented) The multi-channel image encoding apparatus of claim 20,
2 said similarity calculation unit determining a calculated similarity as the first mode when the
3 calculated similarity is greater than a set-up reference value, and as the second mode when
4 the calculated similarity is less than set-up reference value.

1 22. (Previously Presented) The multi-channel image encoding apparatus of claim 19,
2 further comprising:

3 a channel selection unit for setting up a channel select pattern to encode with regard
4 to the plurality of input channels; and

5 a channel controller for controlling the first multi-switch unit, the second multi-
6 switch unit, and the frame memory selection unit so as to encode received images in
7 accordance with a channel select pattern selected by the channel selection unit.

1 23. (Currently Amended) An encoding method of a multi-channel image encoding
2 apparatus for selectively receiving image signals transmitted through a plurality of input
3 channels and encoding the image signals, comprising the steps of:

4 outputting unit frame data for each channel to an encoder by selecting the input
5 channels in accordance with a set-up encode order;

6 selecting frame memory of channels corresponding to inputted unit frame data among
7 frame memory having numbers corresponding to the number of input channels;

8 calculating a similarity by comparing data previously stored in selected frame memory
9 with frame data of currently inputted channels; and

10 encoding the present frame data by an intra coding method when the similarity is less
11 than a set-up reference value;

12 said encoding comprising performing a discrete cosine transform with respect to the
13 input image signals to produce resultant output signals, quantizing the resultant output

14 signals to produce a quantized output, performing a variable length encoding with respect
15 to the quantized output to produce variable length encoded outputs, loading channel
16 information about each frame to the variable length encoded outputs, and outputting loaded
17 signals.

1 24. (Previously Presented) The encoding method of a multi-channel image encoding
2 apparatus of claim 23, wherein when the similarity is greater than the reference value, then
3 data gained by subtracting previous data from present data is encoded.

1 25. (Previously Presented) The encoding method of a multi-channel image encoding
2 apparatus of claim 23, the similarity calculation being performed with a set-up macro block
3 unit.

1 26. (Currently Amended) A multi-channel image encoding apparatus for selectively
2 receiving image signals transmitted through a plurality of input channels and encoding the
3 image signals, comprising:

4 a channel data processor comprising a frame buffer group including a plurality of
5 frame buffers for each input channel in order to receive a plurality of frame data through the
6 plurality of input channels and to store the plurality of frame data, the channel data processor
7 selecting data transmitted to the frame buffer group to output the selected data, the channel
8 data processor storing each unit of the frame data into the frame buffer group corresponding

9 to each channel in accordance with a set-up input channel selection order; and

10 an encoder for encoding image signals output from the channel data processor with
11 a Moving Picture Experts Group method;

12 ~~said channel data processor comprising:~~

13 ~~a first multi-switch unit selectively contacting each one of the input~~
14 ~~channels with the plurality of frame buffers of the frame buffer group~~
15 ~~corresponding to said each one of the input channels, said each one of the~~
16 ~~input channels corresponding to a specific and exclusive plurality of frame~~
17 ~~buffers in the frame buffer group; and~~

18 ~~a second multi-switch unit for selectively contacting with said each one~~
19 ~~of the plurality of frame buffers of the frame buffer group corresponding to~~
20 ~~said each one of the input channels, and outputting to the encoder data~~
21 ~~outputted from the plurality of frame buffers of the frame buffer group~~
22 ~~corresponding to said each one of the input channels~~

23 said encoder comprising:

24 a discrete cosine transformer for performing a discrete cosine transform
25 with respect to the image signals inputted from the second multi-switch unit;

26 a quantizer for quantizing signals outputted from the discrete cosine
27 transformer and outputting the quantized signals

28 a variable length encoder for performing variable length encoding with
29 respect to signals outputted from the quantizer, and outputting the encoded

30 signals; and
31 a parser for loading channel information about each frame to signals
32 outputted from the variable length encoder, and outputting the signals.